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By- Johnson, Norman C.; Knight, Octavia B.

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An instructional enrichment program in a Murfreesboro, N.C., school was designed to help academically retarded students in grades 3 to 8 (I.Q. 72-85). The participating students, who were retarded from 1 to 5 years, were grouped homogeneously to receive individual and small group instruction, and were encouraged to develop good listening and study habits. The combined mean gain for these students computed for the 7-month period between pretesting and posttesting on the Stanford Achievement Test was 8.0 months, and 52 percent of them exceeded gains that would have been expected from a group of nonretarded students of average intelligence. (NH)

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OFFICE OF EDUCATION

NORMAN C. JOHNSON

OCTAVIA B. KNIGHT
North Carolina College at Durham

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Can Enrichment Help the Academically Retarded?

Much attention is being given to the academic retardation found in the average school. Among the measures being used to cope with the problem are in-service training programs, special reading programs, modified grouping procedures, team teaching, and enrichment programs.

Can an enrichment program step up the achievement of academically retarded children in elementary school? Our study was designed to examine this question.

The enrichment program selected for study was in effect in an elementary school in Murfreesboro, North Carolina. To find a way of reducing the rate of retardation at this school, the principal decided to group the pupils homogeneously according to intelligence as measured by the California Test of Mental Maturity and achievement as measured by the Stanford Achievement Test. All the pupils in the school were tested. The pupils were then grouped on the basis of the results of the tests.

The 245 academically retarded children included in the study were enrolled in ten classes that represented the lowest levels in the school. The sample included two third-grade classes, one fourth-grade class, one fifth-grade class, two sixth-grade classes, two seventh-grade classes, and two eighth-grade classes. Of the 245 pupils involved in the study, 147 were boys and 98 were girls.

The pupils were found to be retarded academically from one year to four and four-tenths years. Mean intelligence quotients ranged from 72 to 85. Table 1 shows the mean intelligence quotient and the mean retardation for each of these classes.

At the beginning of the academic year the Stanford Achievement Test was administered to the pupils in the study as a pre-test to measure achievement in paragraph meaning, word meaning, spelling, arithmetic reasoning, and arithmetic computation. Toward the end of the school year the test was administered as a post-test. Appropriate levels of the California Test of Mental Maturity were administered as measures of intelligence. A questionnaire on teaching materials,

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teaching methods, devices and equipment, and sources of professional help was designed to secure pertinent information from all the teachers involved.

Contrary to popular belief, enrichment of instruction does not require the introduction of something totally different from what has been done. Enrichment may be achieved by extending what is already being done effectively. A certain technique for solving problems may be used only occasionally; pupils' experiences may be enriched by using the technique more often.

TABLE 1. *Mean Intelligence Quotients and Mean Retardation of the Ten Lowest Level Classes in Grades 3–8 in One Elementary School*

Grade and Class	Mean Intelligence Quotient	Mean Retardation
Three		
Class 1	78	1.5
Class 2	78	1.0
Four	72	1.3
Five	83	2.6
Six		
Class 1	76	3.5
Class 2	85	3.5
Seven		
Class 1	79	2.9
Class 2	72	4.4
Eight		
Class 1	72	4.1
Class 2	78	2.9

Enrichment as conceived by the teachers in this program involved the selection and use of activities, procedures, and materials to achieve a higher quality of instruction, more learning, a higher quality of learning, and greater independence in the solution of academic problems by the pupils.

The enrichment program emphasized the development of effective work habits and initiative in pursuing problems independently. These are assets in coping with any academic problem. The teachers planned instruction to promote good listening habits, good study habits, independent study, and group study.

The enrichment program also emphasized the clarification of concepts. To this end, experiences at appropriate levels were provided for the pupils. Many materials and activities were developed to meet specific needs as they were revealed in the classroom. As evidence that this emphasis played an important part in the teachers' planning and the pupils' learning, we cite increased use of audio-visual equipment and materials—tape recorders, record players, reading machines, phonetic charts, phonetic records, maps, globes, and flash cards.

The enrichment program emphasized, too, appropriate methods to promote the development of traits needed for academic success. Priority was given to methods that would develop a desire to learn facts and principles; to think in abstract terms; to develop intellectual curiosity, skill in the application of ideas, facility in oral and written language, and the ability to generalize.

The methods that teachers in the programs used most frequently were individual instruction, small-group instruction, demonstrations, and informal discussion. These informal, lifelike, individualized methods made it possible to create a variety of contexts

that were meaningful to the pupils and thus made learning more meaningful. The methods had the further advantage of making it possible to integrate communication skills and problem-solving abilities.

To interpret more adequately the gains made by the pupils in each of the classes, a mean expected gain was computed for the seven-month period between pre-testing and post-testing. The mean expected gain was based on the chronological age and the intelligence quotient of each pupil in each class.

The procedure used to calculate the expected gains for each class was based on a method suggested by Adams and Torgerson (1). The method requires the use of chronological age and mental age and a weighting procedure for increasing the influence of mental age in achievement as chronological age increases. The mean mental age and the mean chronological age at the time of the pre-test and the post-test were determined and the expectancy formulas were applied. The derived expectancy value was then checked against a multiple-line graph that showed grade levels by months and chronological ages by months for intelligence quotients ranging from 65 to 100 in five-point intervals. The graph was developed from Adams and Torgerson's formulas and was adjusted to accommodate the points in chronological age at which variations of the weighting occurred. The graph could then be read to determine the amount of change in grade placement that would probably occur for a seven-month change in chronological age for the intelligence quotients represented.

TABLE 2. *Mean Intelligence Quotients, Mean Expected Gains, Mean Grade Placements, and Standard Deviations for the Ten Lowest Classes in Grades 3 and 4, Grades 5 and 6, and Grades 7 and 8*

Grades and Class	Mean Intelligence Quotient	Mean Expected Gain (Months)	Mean Grade Placement		Standard Deviation	
			Pre-test	Post-test	Pre-test	Post-test
Three						
Class 1	72	4.0	1.5	2.5	.6	.8
Class 2	78	4.5	2.1	2.9	.3	.5
Four	72	4.5	2.8	3.8	.5	.7
Five	83	5.0	2.4	3.0	.7	.8
Six						
Class 1	76	5.0	2.6	3.0	.8	.8
Class 2	85	5.0	3.3	4.0	.8	.8
Seven						
Class 1	79	4.5	4.2	5.0	.6	.9
Class 2	72	5.0	3.0	3.6	.5	.8
Eight						
Class 1	78	5.0	5.1	6.2	.8	1.3
Class 2	72	4.0	3.9	4.2	1.0	1.4

Table 2 shows the mean expected gains and the mean pre-test and the post-test achievement scores for Grades 3 and 4, Grades 5 and 6, and Grades 7 and 8.

All the third-grade and fourth-grade

classes made gains beyond the four and the four and a half months expected. These classes showed gains of from eight to ten months.

The fifth- and sixth-grade groups showed mean gains of six months, four months, and seven months. The mean expected gain for these groups was five months. Only one class attained less than the expected level of growth.

Seven fifth- and sixth-graders scored from one to four months less on the post-test than on the pre-test. Forty of the eighty-seven pupils, or 46 per cent, made gains of seven months (normal expectancy) to 1.9 years.

The mean intelligence quotients for the fifth- and sixth-grade classes were 83, 76, and 85. The sixth-grade group whose mean gain was below the mean expected gain was also the group that had the lowest mean intelligence quotient.

The mean gain for the eighth-grade classes was seven months. As would be expected, the variability within each class increased. One seventh-grade class showed a mean gain of eight months; the other showed a mean gain of six months. The mean expected gain for the first class was four and a half months; the mean expected gain for the second group was five months.

The mean gain for the four seventh- and eighth-grade classes was 7 months. As Table 2 shows, the classes exceeded expected levels of growth.

Sixteen of twenty-one pupils, or 76 per cent of the fourth-grade group, reached or exceeded normal expected grade gain for the seven-month period, while eighty-two of ninety pupils, or 91 per cent, of the seventh-grade and eighth-grade pupils reached or exceeded their expectancy.

The combined mean gain for the academically retarded children studied was 8.0 months for the enrichment period. The mean expected gain for this group was 4.8 months. The total group exceeded expected gains by more than three months' academic growth. Fifty-two per cent of the academically retarded pupils made or exceeded gains that would have been expected in a normal group of non-retarded pupils of average intelligence. These results indicate that enrichment programs of the type offered in this study are likely to be effective.

REFERENCES

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